



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1459
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,718	04/05/2006	Hong-Jae Lee	1728.08	4996
29138	7590	02/03/2009		
PARK LAW FIRM 3255 WILSHIRE BLVD SUITE 1110 LOS ANGELES, CA 90010			EXAMINER SZEWczyk, CYNTHIA	
			ART UNIT	PAPER NUMBER
			1791	
			MAIL DATE	DELIVERY MODE
			02/03/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,718

Applicant(s)

LEE ET AL.

Examiner

CYNTHIA SZEWCZYK

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 13, 15 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by LATOS (US 3,880,969).

LATOS discloses that it is known in the prior art to impregnate a polyurethane foam (polymer sponge of instant claim 13) with an aqueous slurry of sodium silicate (inorganic adhesive of instant claims 13 and 15) (col. 1, lines 15-20). The impregnated sponge is removed of excess slurry (dewatering of instant claim 13) and dried (drying of instant claim 13) (col. 1, lines 21-23). Although LATOS does not explicitly state that the sponge has a coating, a person having ordinary skill in the art would have known that when the sponge is removed from being immersed in the aqueous slurry for impregnation, the slurry would leave a coating on the outer surface of the sponge. LATOS discloses that the prior art method produced an open celled porous structure (porous ceramic body of instant claim 39) (col. 1, lines 25-26).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the impregnating, dewatering, and drying steps are performed several times. It would have been obvious to perform the steps several times because a person of ordinary skill in the art would have known that it would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the impregnating, dewatering, and drying steps are performed several times. It would have been obvious to perform the steps several times because a person of ordinary skill in the art would have known that it would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of YASUDA et al. (US 3,886,100).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the adhesive is mixed with a surfactant. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the impregnation solution in order to add the solution homogenously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to add a surfactant to the adhesive of LATOS to ensure that the adhesive would have been dispersed

homogenously during the impregnation. Therefore, the claimed invention would have been obvious.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of HORIUCHI et al. (US 5,919,546).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the adhesive is mixed with either silane coupling agents or an organic adhesive. HORIUCHI et al. discloses a porous ceramic impregnated wiring body. HORIUCHI et al. discloses that a silane coupling agent can be impregnated to improve adhesion property (col. 4, lines 60-63). It would have been obvious to mix the silane coupling agents with the inorganic adhesive of LATOS to improve the adhesion property. Therefore, the claimed invention would have been obvious.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of JIN (US 6,296,699 B1).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the adhesive is mixed with either sodium silicofluoride or magnesium sulfate. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in LATOS is sodium silicate, it would have been obvious that adding sodium silicofluoride would have added strength to the ceramic structure produced by LATOS. Therefore, the claimed invention would have been obvious.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of BOUTLE (US 4,157,424).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the adhesive is mixed with a water repellant. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of LATOS in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of CROOKE et al. (US 4,332,753).

LATOS discloses a method for producing porous ceramic structures. LATOS fails to disclose that the adhesive is mixed with phosphate. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge can be composed of polyurethane (col. 2, lines 14-16) as in LATOS. CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable properties such

as thixotrophy, wetting ability, and mould resistance (col. 2, lines 22-26). It would have been obvious to add phosphate to the adhesive to adjust the properties of the finished ceramic to desirable settings. Therefore, the claimed invention would have been obvious.

10. Claim 21- 23, 29, and 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499).

LATOS discloses a method for producing porous ceramic structures wherein the polyurethane foam is impregnated with an aqueous slurry of sodium silicate (col. 1, lines 15-20). LATOS fails to disclose that a curing agent is added into the pores of the sponge. TANSILL discloses a resin-coated fiber mass containing catalyst-filled hollow fibers. TANSILL discloses that a liquid curing agent can be impregnated into the pores of a polyurethane foamed material (col. 10, lines 48-54). FUMA et al. discloses a method for manufacture of a shaped article of organic substance. FUMA et al. discloses that a gaseous curing agent can be passed through a structure to aid curing and encourage solidification (abstract). It would have been obvious to one of ordinary skill in the art that a gaseous curing agent could be used as the curing agent of TANSILL because a gaseous curing agent would fit into smaller pores easier. It would have been obvious to insert a gaseous into the pores of LATOS because that would have helped solidify the product. It would have been obvious to perform the steps several times because a person of ordinary skill in the art would have known that it

would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of YASUDA et al. (US 3,886,100).

LATOS as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with a surfactant. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the impregnation solution in order to add the solution homogenously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to add a surfactant to the adhesive of modified LATOS to ensure that the adhesive would have been dispersed homogenously during the impregnation. Therefore, the claimed invention would have been obvious.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of HORIUCHI et al. (US 5,919,546).

LATOS as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with either silane coupling agents or an organic adhesive. HORIUCHI et al. discloses a porous ceramic impregnated wiring body. HORIUCHI et al. discloses that a silane coupling agent can be impregnated to improve adhesion property (col. 4, lines 60-63). It would have been obvious to mix the silane coupling agents with the inorganic adhesive of modified LATOS to improve the adhesion property. Therefore, the claimed invention would have been obvious.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of JIN (US 6,296,699 B1).

LATOS as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with either sodium silicofluoride or magnesium sulfate. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in modified LATOS is sodium silicate, it would have been obvious that adding sodium silicofluoride would have added strength to the ceramic structure produced by modified LATOS. Therefore, the claimed invention would have been obvious.

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of BOUTLE (US 4,157,424).

LATOS as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with a water repellant. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of modified LATOS in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

15. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of CROOKE et al. (US 4,332,753).

LATOS as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with phosphate. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a

suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge can be composed of polyurethane (col. 2, lines 14-16) as in modified LATOS. CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable properties such as thixotrophy, wetting ability, and mould resistance (col. 2, lines 22-26). It would have been obvious to add phosphate to the adhesive to adjust the properties of the finished ceramic to desirable settings. Therefore, the claimed invention would have been obvious.

16. Claims 30-32, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889).

LATOS discloses a method for producing porous ceramic structures wherein the polyurethane foam is impregnated with an aqueous slurry of sodium silicate (col. 1, lines 15-20). LATOS fails to disclose that a curing agent is combined with the adhesive or that the process is repeated. ANDERSSON discloses a method for the production of fibre composite materials impregnated with resin. ANDERSSON discloses that conventional additives can be used in the impregnation solution, such as curing catalysts (col. 4, lines 42-44). It would have been obvious to one of ordinary skill in the art to add a curing agent to the adhesive mixture of LATOS because that would provide better control of the curing process. It would have been obvious to perform the steps several times because a person of ordinary skill in the art would have known that it

would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

17. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of YASUDA et al. (US 3,886,100).

LATOS as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with a surfactant. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the impregnation solution in order to add the solution homogenously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to add a surfactant to the adhesive of modified LATOS to ensure that the adhesive would have been dispersed homogenously during the impregnation. Therefore, the claimed invention would have been obvious.

18. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of HORIUCHI et al. (US 5,919,546).

LATOS as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with either silane coupling agents or an organic adhesive. HORIUCHI et al. discloses a

porous ceramic impregnated wiring body. HORIUCHI et al. discloses that a silane coupling agent can be impregnated to improve adhesion property (col. 4, lines 60-63). It would have been obvious to mix the silane coupling agents with the inorganic adhesive of modified LATOS to improve the adhesion property. Therefore, the claimed invention would have been obvious.

19. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of JIN (US 6,296,699 B1).

LATOS as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with either sodium silicofluoride or magnesium sulfate. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in modified LATOS is sodium silicate, it would have been obvious that adding sodium silicofluoride would have added strength to the ceramic structure produced by modified LATOS. Therefore, the claimed invention would have been obvious.

20. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of BOUTLE (US 4,157,424).

LATOS as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with a water repellant. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of modified LATOS in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

21. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over LATOS (US 3,880,969) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of CROOKE et al. (US 4,332,753).

LATOS as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified LATOS fails to disclose that the adhesive is mixed with phosphate. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge can be composed of polyurethane (col. 2, lines 14-16) as in modified LATOS. CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable properties such as thixotrophy, wetting ability, and mould resistance (col. 2, lines 22-26). It would have been obvious to add

phosphate to the adhesive to adjust the properties of the finished ceramic to desirable settings. Therefore, the claimed invention would have been obvious.

Response to Arguments

22. Applicant's arguments filed October 29, 2008 have been fully considered but they are not persuasive.

23. It is argued that the method of Latos fails to produce a porous structure after impregnating, squeezing out, and drying. This is not found persuasive as it is deemed that the step of squeezing out the excess slurry drying would clearly remove excess moisture from the impregnated sponge leaving the sponge with the walls of the voids of the sponge coated with ceramic material clearly creating a porous structure. Applicant's argument seems to suggest that even after drying the entire sponge of Latos is completely nonporous – it is not clear how this is occurring since the drying step would remove the aqueous portion of the slurry used to impregnate the sponge thus clearly leaving voids (pores) within the impregnated sponge. It is further noted that the drying step of Latos appears analogous to the instant dewatering step.

24. Applicant argues that the method of LATOS requires an additional step of firing the sponge in order to achieve a porous ceramic body. Claims 13 and 39 cite “the method comprising”, wherein the term “comprising” is open language, indicating that the claimed method is not limited to those disclosed steps, therefore the method of LATOS reads on the claimed method.

25. The applicant argues on page 3 that the polymer sponge of LATOS does not have a coating of adhesive, however, a person having ordinary skill in the art would have known that when the sponge is removed from being immersed in the aqueous slurry for impregnation, the slurry would leave a coating on the outer surface of the sponge.

Conclusion

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA SZEWCZYK whose telephone number is (571)270-5130. The examiner can normally be reached on Monday through Thursday 7:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791

CS